UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

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SUBJECT: National Priorities List Removal Site Evaluation for New Cassel/Hicksville Groundwater Contamination Site, New Cassel/Hicksville, Nassau County, New York

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The United States Environmental Protection Agency (EPA) is required to complete a Removal Site Evaluation (RSE) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at all newly proposed and listed National Priorities List (NPL) sites. The New Cassel/Hicksville Groundwater Contamination Site (Site) was proposed for placement onto the NPL on March 8, 2011 and subsequently placed on the NPL on September 15, 2011.

The Site is located in a heavily developed area consisting of industrial, commercial, and residential land. The Site consists of an area in central Nassau County, New York whose groundwater has been impacted, since at least 1986, by primarily tetrachloroethylene (PCE) and trichloroethylene (TCE) contamination. The aquifer in this area serves as drinking water for the public water systems in the towns of North Hempstead, Hempstead and Oyster Bay. In all, eleven public supply wells have been impacted. The minimum affected area covered by the NPL site is estimated to be 2,200 acres.

Within the towns of North Hempstead and Hempstead, the New York State Department of Environmental Conservation (NYSDEC) has identified three contaminant plumes containing volatile organic compounds (VOCs) from sources of ground water contamination upgradient of the Site. The NYSDEC listed the New Cassel Industrial Area (NCIA) as a Class 2 site in 1988 after Nassau County had conducted a county-wide groundwater investigation. Situated along the western portion of the Site and covering 170 acres, the NCIA was developed for industrial use beginning in the 1950s through the 1970s. There are an estimated 200 industrial and commercial businesses with the NCIA. On-site leach pools or dry wells were generally used for disposal of wastewater until sewers were installed in the mid-1980s. The NYSDEC has investigated and listed 17 individual facilities as Class 2 sites at the NCIA since 1994. Remedial activities have since been conducted by NYSDEC and individual potentially responsible parties at some facilities. Of the 17 facilities listed as Class 2 sites by the NYSDEC, five of the sites have been removed from the Registry and one has been reclassified to a Class 4 Site. Records of Decision (ROD) have been issued for the remaining Class 2 sites.

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Off-site ground water investigations completed in September 2000 identified impacted downgradient locations south of the NCIA, Old Country Road and Grand Boulevard. The properties along Old Country Road are primarily commercial with residential neighborhoods to the south. The area south of Grand Boulevard also consists of residential areas. Two public supply wells (Bowling Green Wells I and II), located approximately 1,800 feet south of NCIA and contaminated since 1988, have been found to contain PCE and TCE above Maximum Contaminant Levels (MCLs). The NYSDEC issued a Record of Decision for the NCIA, Offsite Groundwater, South of the NCIA in October 2003. The remedy selected, and subsequently amended, was full plume remediation of the upper and deep portions of the aquifer with groundwater extraction and treatment.

Groundwater studies conducted by the NYSDEC have tracked the three plumes emanating from NCIA. The highest concentrations in the NCIA associated with the source areas have been identified in the past at depths of 65-99 feet below ground surface (bgs) at levels greater than 100,000 ug/l of total VOCs. During a recent sampling of the eastern plume, the highest concentrations of PCE (16,000 µg/L) and TCE (1,800 µg/L) were detected in a monitoring well located less than 200 feet south of Old Country Road and screened from 119 to 129 feet bgs. The central plume contained a maximum PCE concentration of 330 ug/l at 165 feet bgs and a maximum TCE concentration of 990 ug/l at 200 feet bgs, in a monitoring well located approximately 700 feet south of Old Country Road. It was reported that there was evidence that the eastern and central plumes may be commingling downgradient of the Bowling Green wells. The western plume contained a maximum PCE concentration of 3,700 ug/l and a maximum TCE concentration of 5,100 ug/l, both at a depth of 225 bgs, in monitoring wells located approximately 2,500 feet and 1,800 feet south of Old Country Road, respectively.

The plumes have a significant vertical flow component as they move further downgradient from the NCIA. Pumping from the Bowling Green public supply wells reportedly influences the hydraulic gradients within the eastern and central portions of the impacted downgradient area. Influence from the pumping in the public supply wells increases with depth and proximity to the pumping wells. The cone of depression from the Bowling Green wells reportedly extends under most of the eastern and central plumes. The Bowling Green wells extract water from depths greater than 500 feet with a pumping rate of 1,400 gallons per minute.

Within the Town of Oyster Bay, in Hicksville, separate investigations to the northeast of NCIA have documented a ground water plume containing PCE and TCE to be emanating from two former industrial facilities, General Instruments and Sylvania. Two public supply wells (Well Nos. 5-2 and 5-3), located approximately one mile south of General Instruments and Sylvania and contaminated since 1995, have been found to be contaminated with PCE and TCE above MCLs. The zone impacted by the plume from the General Instruments Site is estimated to be at least 290 feet deep at the Nassau County Department of Public Works property, located 1,800 feet to the south. A deeper plume of PCE from the upgradient Sylvania site is reported to be present beneath the plume emanating from the General Instruments site. Portions of the plume are reported to be deeper than 350 feet bgs, with PCE levels greater than 1,000 ug/l. Alpha radiation from the Sylvania site has been identified in certain monitoring wells near the General Instruments property. The potentially responsible party has reportedly claimed that a

portion of the VOC plume associated with the General Instruments and Sylvania sites has combined with the eastern plume from the NCIA due to the pumping from the Bowling Green supply wells.

The former General Instruments Company started operations around 1960 on Cantiague Rock Road. The company manufactured semiconductors. The NYSDEC listed the property as a Class 2 site in 1983. A Record of Decision was issued in March 1997 to clean-up the on-site soils. Certain areas of the Site have been remediated. A groundwater investigation and a soil vapor extraction remedy are ongoing. The latter was initiated in the mid-1990s and reportedly removed 19,000 pounds of solvent from the subsurface in the first few years. The soil vapor extraction unit was recently shutdown and a vapor intrusion investigation is planned for the on-site buildings in the near future. Soil gas samples will also be collected on the perimeter of the property. The buildings on the General Instruments property are reportedly currently occupied.

The former Sylvania Company started operations in 1952 on Cantiague Rock Road. The property is located adjacent to and upgradient of the General Instruments property. Operations at Sylvania included research and development for nuclear weapons, and manufactured reactor cores and fuel elements from 1952 to 1966 and high temperature coatings and composite alloys for space and aircraft industries from 1952 to 1969. The site was discovered in 1986 with the finding of buried drums with chlorinated organic solvents. The NYSDEC listed the properties as a Class 2 site in 1995. A Voluntary Cleanup Program Agreement with the company resulted in a partial soil cleanup that was completed in 2004. Additional soil contamination remains to be addressed. A groundwater investigation is ongoing. A portion of the Site has been addressed under the Formerly Utilized Sites Remedial Action Program since several of the buildings operated under license from the Atomic Energy Commission. The remaining structures were evaluated in 1996 and found to not contain radiological readings above background. A Remedial Investigation was completed in 2010 and a Feasibility Study is ongoing.

A database search centered on Hicksville Wells 5-2 and 5-3 identified 20 facilities associated with F001 to F005 wastes located within approximately one mile of the wells. Within 1.5 miles of the Site, three RCRA Corrective Action sites, eight RCRA Generators, 29 State-listed hazardous waste sites, three landfills, 175 leaking underground storage tank sites and four dry cleaners were identified. The NYSDEC is the lead agency for the NCIA, the General Instruments Site and the Sylvania Site.

Approximately 750 feet west of the General Instruments Site, on Prospect Avenue, is located an active facility known as Sulzer Metco, Inc. The facility manufactures thermal spray equipment and related materials and supplies. PCE, TCE, 1,1-dichloroethane and 1,1,1-trichloroethane (1,1,1-TCA) were used by the facility as degreasing solvents over an approximate 20 year period ending in the late 1970s. Spent solvents were discharged into floor drains that led to onsite cesspools. A recharge basin was used for storm and process water prior to sewer connections in 1983. Past investigations identified heavy metals in a drywell at the loading dock. VOCs were discovered in the distribution box but not the leaching pool. The cesspools were abandoned in 1983 and the distribution box and settling chamber were closed in 1998.

The NYSDEC completed a Site Characterization Report at the Sulzer Metco property in September 2012. The investigation included the installation of monitoring wells and the collection of soil, groundwater and soil gas samples at the Sulzer Metco property, and the installation of monitoring wells and the collection of groundwater samples at the off-site downgradient locations across Prospect Avenue. VOCs were not identified onsite in soil borings or monitoring wells above NYSDEC criteria. PCE, TCE, 1,1-dichloroethylene and 1,1,1-TCA were identified in the easternmost monitoring well installed at the offsite downgradient location at a depth of 130 feet bgs. PCE, toluene, ethylbenzene, xylene and 4-ethyltoluene were identified in all six soil gas samples collected at the Site. Benzene, 1,3,5-trimethyl benzene, n-heptane and hexane were also identified in some of the soil gas locations. PCE concentrations in the soil gas ranged from 14-1,000 ug/m^3. PCE was detected on the north (14 ug/m^3), northeast (720 ug/m^3) and southeast (790 ug/m^3) sides of the Sulzer Metco property, approximately 50 feet, 150 feet and 150 feet, respectively, from the Joseph M. Barry Career and Technical Education Center, which is situated between the Sulzer Metco property and the General Instruments Site.

In addition to the MCL exceedances at Bowling Green Well Nos. I and II, and Hicksville Well Nos. 5-2 and 5-3, MCL exceedances have also been identified at Hicksville Well Nos. 4-2, 8-1, 8-3 and 9-3; Hempstead Levittown Well No. 2a; Hempstead-Roosevelt Field Well No. 10 and Westbury Well No. 11. The highest concentrations of PCE and TCE detected in the public supply wells at the Site have been 46.4 ug/l and 188 ug/l, respectively. Other contaminants identified in some of these supply wells include carbon tetrachloride (9 ug/l), 1, 1-dichloroethane (4 ug/l), 1, 2-dichloroethane (0.9 ug/l), 1, 1-dichloroethylene (12 ug/l), cis-1, 2-dichloroethylene (6.6 ug/l) and 1, 1, 1-trichloroethane (8 ug/l). Carbon tetrachloride and 1, 1-DCE have also been detected above MCLs.

The impacted aquifer at the Site, and the primary source of drinking water in Nassau County, is the Magothy aquifer. All of the public supply wells sampled by EPA in August 2010 pump water from the Magothy aquifer, with the exception of Westbury Well 9, which pulls from the deeper Lloyd Sand aquifer. The thickness of the Magothy aquifer is approximately 600 feet at the Site. Depth to the water table at the site varies from 38 to 50 feet and ground water flows in a south-southwesterly direction. Contaminants have also impacted the downgradient public water supply wells completed in the Magothy aquifer located more than 500 feet bgs.

The blended Town of Hempstead water supply system consists of 28 active wells serving 112,592 people, the blended Hicksville system consists of 14 active wells serving 47,810 people, and the blended Westbury system consists of 10 active wells serving 20,500 people. No single well in any of these systems contributes more than 40 percent of the total blended water supply. As of 1995, the Nassau County Department of Health reported that the Bowling Green wells and Hicksville wells were being treated for VOC removal. Within the Town of Hempstead, the two impacted public supply wells are treated with an air stripper followed by carbon polishing prior to distribution. In Hicksville, the public supply well field is treated by air stripping prior to distribution. It is reported that there are no individual residential potable wells present at the Site.

Although the plumes from the NCIA have a significant vertical component due to the pumping from the deep public supply wells and the nature of the aquifer, shallow groundwater monitoring wells screened from 90 to 110 feet bgs, and situated in the residential area downgradient from the NCIA, have been found to contain VOCs. TCE has been identified in these downgradient monitoring wells at distances of 500 feet (35 ug/l), 715 feet (79 ug/l) and 2,400 feet (8 ug/l) south of the NCIA. PCE has been identified in these same monitoring wells at 25 ug/l, 13 ug/l and 7.8 ug/l, respectively. As a result, the NYSDEC conducted a soil vapor investigation and vapor intrusion investigations downgradient of the NCIA during the period 2006 through 2009. Phase 1 of the vapor investigation completed in September 2006 included 38 outdoor locations, with two depths from each location. PCE was identified above New York State vapor guidelines (100 ug/m^3) at three locations, with the highest concentration being 1,086 ug/m^3. TCE was identified at seven locations above NYS guidelines (5 ug/m^3), with the highest concentration being 363 ug/m^3.

Based on these results, Phase 2, which included the collection of six indoor air samples at the W.T. Clarke High School, was conducted in September 2007. The VOCs detected, with their maximum concentrations, were: PCE (2.28 ug/m^3), TCE (3.71 ug/m^3), methylene chloride (1.91 ug/m^3), carbon tetrachloride (0.831 ug/m^3), benzene (1.95 ug/m^3), toluene (8.24 ug/m^3) and xylene (4.55 ug/m^3).

Phase 3 was subsequently conducted in March 2009. During Phase 3, indoor air and subslab samples were collected from six residential properties and the W. T. Clarke High school and the Hempstead Water Department facility. An indoor air (only) sample was collected from one additional residence. Originally, sampling at seventeen residences had been planned; however the remainder of the residents either did not provide access or could not be contacted. The highest concentrations of PCE and TCE detected from subslabs were 15 ug/m^3 and 14 ug/m^3, respectively. It was determined that one residence, located approximately 500 feet from the NCIA, required future monitoring due to TCE detections in both the indoor air and the subslab. The NYSDEC determined that all other properties sampled did not require any action based on TCE and PCE. Chloroform was detected in some of the subslab and interior air samples above risk screening levels; however chloroform is not considered a contaminant of concern for the Site as it has been detected infrequently in ground water samples. The highest concentration detected in a ground water sample is 8 ug/l, well below the MCL (80 ug/l). The final report, dated September 2009, recommended sampling at additional residences to fill data gaps in the offsite area due to the distance between the locations that were sampled.

In March 2008, the NYSDEC also completed a soil vapor source investigation at the NCIA and covered five locations at each of seven of the known individual sites, with three depths from each location. PCE and 1,1,1-TCA were identified emanating from source areas.

As with the groundwater contaminant plumes at the NCIA portion of the Site, the plumes migrating southward from the General Instruments and Sylvania sites have a significant vertical component due to the pumping from the deep public supply wells and the nature of the aquifer. Monitoring wells situated south of the western end of Duffy Avenue and West Old Country Road reveal TCE and PCE contamination, with the highest concentrations generally present at

depths of 200 to 300 feet bgs, and the deepest detectable concentrations more than 500 feet bgs. Downgradient, in the residential neighborhood, the VOCs are generally not detected till 200 feet bgs.

The available information indicates that there has been a release of VOCs to the subsurface at locations upgradient of the Site that has impacted public supply wells. The VOCs are considered CERCLA designated hazardous substances as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14). The Site is defined as a facility under section 101(9) of CERCLA, 42 U.S.C. § 9601(9). The subsurface contamination at the Site constitutes a "release," as defined in Section 101(22) of CERCLA, 42 U.S.C. Section § 9601(22). The water supplies have been found to contain TCE at concentrations above the MCL (5 ug/l) and the Removal Management Level (RML) (7.7 ug/l), and PCE at concentrations above the MCL (5 ug/l). Although the RML for PCE and TCE is exceeded throughout the aquifer and these elevated levels continue to migrate towards the public supply wells, the impacted public supply wells are all currently being treated to remove the VOCs.

The southern edge of the NCIA is located across the street from the downgradient residential area. While the groundwater plumes emanating from the NCIA do have a significant vertical component to their migration, portions of the shallow groundwater under the residential area is contaminated with VOCs above the MCLs for TCE and PCE. Limited vapor intrusion studies south of the NCIA have identified one residence that should continue to be monitored due to TCE levels beneath the subslab and within the residence. However, as concluded by the Phase 3 vapor intrusion report for the NYSDEC, additional sampling is needed in certain areas to fill data gaps since this is a large area covered by many homes and six residential locations is not sufficiently representative of the area.

With respect to the eastern portion of the Site, the General Instruments and Sylvania sites are located further upgradient of the residential areas than the plumes at the western end of the Site and the contaminant plumes appear to be at least 200 feet deep as they cross under West Old Country Road. Based on this assumption, it is not likely that the residential areas south of West Old Country Road would be impacted by vapor intrusion as a result of the plumes associated with the General Instruments and Sylvania sites. However, it appears that there could potentially be a vapor intrusion issue between the General Instruments Site and the Sulzer Metco property.

Based on the available information, a CERCLA removal action is not warranted at the Site at this time. Additional vapor intrusion investigative efforts are warranted in the area south of the NCIA and in the area of Prospect Avenue, east of the Wantagh State Parkway, to confirm that subsurface VOC vapors are not impacting occupied structures.